Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

ACC22
APRIL 2 - 4 | WASHINGTON, DC

2390
JACC March 8, 2022
Volume 79, Issue 9, suppl A

Complex Clinical Cases

EVOLOCUMAB TREATMENT FAILURE FOLLOWING COVID-19 MRNA VACCINATION

Poster Contributions
For exact presentation time, refer to the online ACC.22 Program Planner at https://www.abstractsonline.com/pp8/#!/10461

Session Title: Complex Clinical Cases: FIT Flatboard Poster Selections -- Covid
Abstract Category: FIT: Coronavirus Disease (COVID-19)

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Background: Proprotein convertase subtilisin/kexin type 9 (PCSK9) is a protein responsible for regulating low-density lipoprotein receptor recycling. Monoclonal antibodies that inhibit PCSK9, such as evolocumab, have emerged as an effective therapeutic option to lower LDL cholesterol (LDL-C) levels and the risk of cardiovascular events, particularly in statin resistant or intolerant patients. One of the extremely rare limitations to the clinical efficacy of evolocumab is the development of anti-evolocumab antibodies.

Case: We present a case of a 52 year old man with a past medical history of hyperlipidemia (HLD) and coronary artery disease. For HLD, he was initially on simvastatin 40mg daily, ezetimibe 10mg daily, and fenofibrate 54mg daily with suboptimal LDL-C control at 92 mg/dL. He was subsequently started on evolocumab 140mg subcutaneous injection every two weeks, with the LDL-C dropping from 92 mg/dL to 17 mg/dL. Over the next two years, LDL-C level remained stable below 45 mg/dL. Despite strict adherence to evolocumab for two years including direct observation of the patient injecting himself with no changes in administration technique or concurrent medications changes, LDL-C level increased significantly from 44 mg/dL to 121 mg/dL between two last lipid panels done nine months apart. The only pertinent history elicited from him was the administration of the second dose of the COVID-19 mRNA vaccine one month prior to the latest lipid panel.

Decision-making: The development of anti-evolocumab antibodies is extremely rare. In the OSLER-1 study, out of 1,324 patients enrolled and received evolocumab, only two developed binding antibodies. Autoantibody assay for this patient is still pending.

Conclusion: The development of anti-evolocumab antibodies is extremely rare. Given the proximity of COVID-19 mRNA vaccine administration to the rapid decline of evolocumab efficacy, with no other potential explanatory changes, it is possible that the reduced efficacy of PCSK9 inhibition was related to the changes induced by the vaccine, warranting further investigation into the mechanism by which it could cause generation of anti-evolocumab antibody.